

# source moving **toward** stationary observer

- $f'$  = shifted frequency heard by observer
- $f$  = original frequency
- $v_{\text{source}}$  = speed of the sound source
- $v_{\text{sound}}$  = speed of sound (340 m/s)

$$f' = \frac{f}{1 - \frac{v_{\text{source}}}{v_{\text{sound}}}}$$

source moving **away** from  
stationary observer

$$f' = \frac{f}{1 + \frac{v_{source}}{v_{sound}}}$$